Printed Pages—3 ECS701

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2715 Roll No.

B.Tech.

(SEM. VIII) EVEN THEORY EXAMINATION 2012-13

DISTRIBUTED SYSTEMS

Time : 3 Hours *Total Marks : 100*

1. Attempt any **two** questions : **(10×2=20)**

   (a) What are the inherent limitations of distributed system ? What could be the impact of absence of global clock and shared memory ?

   (b) Define global state and consistent global state. Give the Chandy-Lamport's global state recording algorithm.

   (c) Discuss following with suitable example :

   (i) Causal order

   (ii) Total order.

2. Attempt any **two** questions : **(10×2=20)**

   (a) With reference to the token based algorithm, explain how Raymond tree based algorithm works ?

   (b) Show that in Ricart-Agrawala algorithm the critical section is accessed according to increasing order of timestamps. Does the same hold true in Maekawa's algorithm ?

(c) Suppose all the processes in the system are assigned priorities that can be used to totally order the processes. Modify edge chasing algorithm so that when a process detects a deadlock, it also knows the lowest priority deadlock process.

3. Attempt any **two** questions : **(10×2=20)**

(a) Discuss the Oral Message algorithm OM(m), where m>0. With the help of suitable example show that it solves the Byzantine agreement problem for 3m + 1 or more processors in the presence of at most m faulty processors.

(b) In the context of distributed file system explain following :

(i) Mounting

(ii) Caching

(iii) Bulk Data transfer.

(c) Explain the read replication and full replication algorithm for implementing distributed shared memory.

4. Attempt any **two** questions : **(10×2=20)**

(a) Describe any checkpointing and recovery algorithm that takes a consistent set of checkpoints and avoids livelock problems.

(b) Discuss the majority based dynamic voting protocol.

(c) Discuss following with suitable example :

(i) Consistent set of checkpoints and Strongly consistent set of checkpoints.

(ii) Orphan messages and Lost messages.

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5. Attempt any **two** questions : **(10×2=20)**

(a) Describe two-phase commit protocol. Give the state transition diagram of this protocol. What are the demerits of this protocol ?

(b) Discuss the optimistic methods for distributed concurrency control. What are the different validations conditions for optimistic concurrency control ? Explain it.

(c) Write short notes on any **one** of the following :

(i) Flat and Nested transaction

(ii) 2PL and strict 2PL.